# Making Startup Services in Red Hat Manageable

**_chkconfig_ provides a simple and easy interface for system administrators and users to work with startup scripts in RH systems, thereby relieving them from directly manipulating and messing up startup services.**

When a Linux system boots up, the first process that shows up is the *init* process. *init* is the parent of all processes running on your system. It performs the task defined in the */etc/inittab* file. This file describes how the *init* process should set-up the system in a certain run-level. A run-level is a software configuration of the system that allows only a selected group of processes to exist. Figure 1 shows a snippet from a */etc/inittab* file:

**Figure 1: */etc/inittab* snip**

```
id:5:initdefault:

l5:5:wait:/etc/rc.d/rc 5
```

In Figure 1, the first line defines the default run-level for the system. The second line defines the action and the process that *init* should execute while entering the run-level. The action 'wait' will instruct *init* to execute the process */etc/rc.d/rc 5* once while entering the run-level '5' and wait for the process to terminate.

The */etc/rc.d/rc* executes all the scripts (services) listed under */etc/rc.d/rc5.d*. It first executes all the scripts that start with the letter 'K' with 'stop' as the argument, and then executes all scripts that start with the letter 'S,' with 'start' as the argument. The order of K and S script execution is based on the sort order; the script named *S90crond* would execute before the script named *S95atd*.

In a Red Hat-based system, you can see that the scripts listed under */etc/rc.d/rc5.d* are actually symbolic links to scripts defined under */etc/init.d*. As a systems administrator or a user, you can feel that creating and maintaining these symbolic links over a period of time would be a nightmare. This is where the *chkconfig* command comes in.

*chkconfig* is the command line utility that provides a simple interface for creating and maintaining symbolic links under the */etc/rc[0-6].d* directories. Using this utility, you can add, delete, list, and change start-up services (scripts) on your system. Let's look at each of the *chkconfig* functionalities in detail.

## Listing *chkconfig* entries

Use the *--list* option to list all the services and

their options at each run-level. If you want details only for a particular service, then specify the name along with the --*list* option. A sample output snippet is shown in Figure 2.

**Figure 2: *chkconfig* list output**

```
atd      0:off   1:off   2:off   3:on    4:on    5:on    6:off
crond    0:off   1:off   2:on    3:on    4:on    5:on    6:off
```

On each line of the output, the first field represents the name of an *init* script in */etc/rc.d/init.d*. The remaining fields correspond to the run-levels 0-6, along with the status of the script when entering that run-level.

For example, in Figure 2, you can see that *atd* will be started when entering run-levels 3, 4 and 5 and will be stopped when entering run-levels 0, 1, 2 and 6. You can confirm this by searching for *atd* files under *the etc/rc.d* directory as shown in Figure 3.

**Figure 3: Searching for *atd files***

```
# pwd
/etc/rc.d
# find . -name "*atd*"
./rc6.d/K05atd
./rc0.d/K05atd
./rc2.d/K05atd
./rc4.d/S95atd
./init.d/atd
./rc1.d/K05atd
./rc5.d/S95atd
./rc3.d/S95atd
```

In Figure 3, you can see that for each 'off' section reported by *chkconfig* (0, 1, 2, 6), a kill script is in place, and for each 'on' section reported (3, 4, 5), a start script exists.

## Changing *chkconfig* entries

Use 'on', 'off' or 'reset' parameters after the service name to change the start-up information for the specified service. For example, to disable the 'crond' service for run-level 5, execute the command shown in Figure 4.

**Figure 4: Disabling a *chkconfig* service**

```
# chkconfig --level 5 crond off

# chkconfig --list crond
crond     0:off   1:off   2:on    3:on    4:on    5:off   6:off
```

From the 'chkconfig –list' output, you can see that the service 'crond' will not be started at run-level 5.

## Adding new *chkconfig* entries

To add a new start-up service, use the —*add* option as shown in Figure 5.

**Figure 5: Adding new *chkconfig* service**

```
# chkconfig –add crond
```

For *chkconfig* to manage (add) the new service, it needs two or more commented lines in the service script. The first line instructs *chkconfig* what run-levels the service should be started in by default, as well as the start and stop priority levels. The second line contains a description for the service. Figure 6 shows the two commented lines for 'crond' service.

**Figure 6: Commented lines for *crond* services**

```
# chkconfig: 2345 90 60
# description: cron is a standard UNIX program that runs \
# user-specified programs at periodic scheduled times. vixie \
# cron adds a number of features to the basic UNIX cron, \
# including better security and more powerful configuration \
# options.
```

From Figure 6, you can see that *chkconfig* will create 'crond' symbolic links at run-levels 2, 3, 4, and 5, with 90 as the start priority and 60 as the stop priority. If you need to change the run-levels in the script, then simply run 'chkconfig' with the 'reset' option.

## Removing a *chkconfig* entry

To remove the service completely, use the --*del* option. This command will instruct *chkconfig* to remove all symbolic links, keeping the service script in */etc/init.d* untouched.

When you add a new service, *chkconfig* will not start the service. Similarly, when you delete or disable a service, *chkconfig* will not stop the service. It is up to the user to start or stop the service separately, either by rebooting the system, running the service command or changing to a different run-level.

*chkconfig* provides a simple and easy interface for system administrators and users to work with start-up scripts. It relieves them from directly manipulating and thereby messing up with the startup services (scripts). Give it a try and you will appreciate the power of this command. Happy administration!

## REFERENCES


- man init
- man inittab
- man chkconfig
- /etc/inittab



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